

A Catalogue of the Birds in the Collection of the Bombay Natural History Society—1

Gaviiformes to Ciconiiformes

BY

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INTRODUCTION

The first number of the *Journal of the Bombay Natural History Society* (1886) contained a list of birds of 144 species in the collection of the Society, collected by a Mr. Anderson at Simla and Col. W. B. Thompson in Cashmere. From time to time the *Journal* carried lists and notes on the birds of the various districts and provinces, and such contributions were almost invariably accompanied by specimens, at least of the more interesting forms, to support the identification. Sportsmen all over the country sent in specimens (or parts) of ducks, geese, and swans which they could not identify, or in support of new records from outside the known ranges.

The publication of Stuart Baker's *FAUNA OF BRITISH INDIA : BIRDS*, Vols. 1-8, 1922-1930, drew attention to the absence of an essential requirement for the determination of subspecies, namely series of specimens from different places of the form under examination. The first attempt to fill in these gaps was the Scientific Survey, sponsored by Mr. A. S. Vernay, of the Eastern Ghats, an area which had been omitted from the Society's extensive Mammal Survey commenced before the First World War. The Ornithological Section of the Vernay Survey, which commenced work in April 1929, obtained fair series of the commoner birds, and the collection was reported upon by Hugh Whistler & N. B. Kinnear in the Society's *Journal*. This report is still an indispensable work of reference for any study of Indian birds, for the authors had access not only to the earlier literature but also to the specimens collected by giants like Jerdon and Hume and they not only published their findings but also discussed the evidence examined by them.

Then followed the ornithological surveys of the various States, namely Hyderabad, Mysore, Travancore and Cochin, etc., most of them by Dr. Sálim Ali.

And, all this time, members throughout the country, many of them officers of the Civil, the Forest, and the Police Services, continued to send occasional specimens for their own information or in support of notes and observations made by them.

The collections obtained by the Surveys were reported upon, mostly by Hugh Whistler, N. B. Kinnear, and C. B. Ticehurst, who between them described several new races and built upon the foundations laid by Stuart Baker. I have no figures, but my association with the Society and its collections, extending over three decades, had left me with the impression that the key specimens were usually retained in England though the numerical bulk was returned to the Society. As the several collections were worked out separately at different times all the specimens were never looked at together. In addition to this, the occasional specimens added from time to time to the collections do not appear to have been critically examined.

When working out my collection from the Andamans, I could not help being struck by the fact that many specimens did not agree with the accounts in current literature. The transfer to the Society's new premises has now made it possible, in spite of distressingly inadequate furniture and equipment, to lay out series of specimens of more than one species and to take a reasonable amount of time over their comparison and study. This therefore is an attempt to list the 22,900 odd specimens in the Bombay collection and to name as many as possible trinomially. This will undoubtedly take a considerable time and, therefore, if any specimen has indicated an extension of the known range of any species or form or necessitated the correction of an earlier record, or where the specimens available have permitted a taxonomic conclusion which differs from that in the SYNOPSIS, I have published my findings separately from time to time.

This instalment of my Catalogue ends with the flamingoes (No. 74 in the SYNOPSIS) and deals with about 435 specimens, up to Register No. 22914 in the Society's collection.

As the number of specimens is expected to increase from time to time and efforts will be made to keep the catalogue up-to-date as far as possible, the highest registered number covered by further instalments will be mentioned in each case.

This work has been and continues to be interesting and many unexpected discoveries have turned up. Twenty-four of the forms mentioned in this instalment are entirely missing from our collection. The paucity of specimens of several forms from many parts of India is patent and I can only hope that these notes will prompt all those, who have the opportunity, to help complete the Society's collection. In many instances we lack specimens of species common in other parts of the world, and I am sure the Society would be glad to consider any ex-

change against species available in India. Our taxonomic studies are far from complete; the days of random collecting for most districts have gone, but specimens of different species are needed from many areas and the work can only be completed with the help of individuals in different places. The Society's collection with all its gaps is one of the best in the country and is intended to form the base of many taxonomic and other studies in India. In instances where migrant species from the north are of two or more races, it is yet unknown to what extent they occupy the same or different areas in India. Of resident species, it is necessary to have series from different parts of the country and at different seasons to determine if there are any consistent differences between such populations. Where the type locality is also mentioned, specimens from these areas (topotypes) are essential for further study. I hope that members in India will help whenever they can. It may be possible for the Society to give lessons in skinning to those who are willing to help, and also to assist them to obtain such permits as are necessary.

EXPLANATIONS

In this Catalogue, the sequence and terminology is generally that used by Ripley in his *SYNOPSIS OF THE BIRDS OF INDIA AND PAKISTAN* (1961). Where this differs from subsequent (or even earlier) records and where it is not possible for me to decide which is correct, I have retained the name as in the *SYNOPSIS* and referred to the differences. The name is preceded by the number in the *SYNOPSIS* and followed by the type locality in parenthesis, the English name, and the volume number and page of Stuart Baker's *FAUNA*. The absence of this reference indicates that the species/race is not listed in the *SYNOPSIS* or the *FAUNA*, as the case may be. The next line gives the number of specimens, followed by figures showing the break-up by sex. Young and juvenile plumages are difficult to designate exactly, particularly as the correct sequence in many Indian birds is imperfectly known. I have referred to young birds in non-flying plumage (e.g. down), both nidifugous and nidicolous, as chicks (abbreviated: ch.), keeping the term pulli (abbreviated: pull.) for young with feathers insufficiently developed to permit flight. Young in their first flying plumage are referred to as juv. (juvenile) or imm. (immature). If a plumage (in which the bird may breed) intervenes between the first flying plumage and the final dress, the bird in such plumage is referred to as sub-ad. (sub-adult). Where sexual, seasonal, or other differences of plumage exist, an attempt is made to indicate which forms are available, e.g. non-flying young or pulli, juvenile, in nuptial plumage, etc. Heads and necks of geese and swans, which form the basis of several records from India, were not

registered ; this has now been done. Entries relating to species which do not occur in Indian limits, but of which specimens are available, are preceded by the prefix EL (extra-limital). I should mention here that by the term ' Indian limits ' I understand the area covered by the SYNOPSIS, i.e. India and Pakistan, together with Nepal, Sikkim, Bhutan, and Ceylon, and also ' the area known roughly as south-east Tibet, the districts of Charme, Takpo, Kongbo, Pemakö and Pome especially, lying as they do along the upper reaches of valleys and waterways of Bhutan and the hills of northern Assam ', and the Andaman and Nicobar Islands.

Then follows a list of the localities from which the specimens have been obtained ; this will serve to indicate at a glance the paucity of material from large areas. Specimens of species and subspecies known to occur in India, but which have been obtained outside our limits, are included but italicised. Where the examination of the material available has raised any points of interest, these are mentioned. They may serve to indicate lines of further work and clarification by those who have the opportunity. Unless otherwise mentioned or appearing from the context, the measurements are in millimetres, the bill is measured from the feathers on the forehead, and the measurements in brackets are from the FAUNA.

In the text, references to literature are made in the customary manner, except :

JBNSH or *Journal*.. *Journal of the Bombay Natural History Society*.

- FAUNA Stuart Baker's FAUNA OF BRITISH INDIA, Birds, Vols. 1-8 (1922-1930).
 OLD FAUNA .. The first edition of the FAUNA, Vols. 1-4 (1889-1898), by Blanford & Oates.
 BR. HANDBOOK .. HANDBOOK OF BRITISH BIRDS, Vols. 1-5 (1938-1941), by Witherby, Jourdain, Ticehurst, and Tucker.
 * IND. HANDBOOK .. HANDBOOK OF THE BIRDS OF INDIA AND PAKISTAN, by Sálim Ali and S. Dillon Ripley.
 Vaurie THE BIRDS OF THE PALEARCTIC FAUNA, Passeriformes (1959) and Non-Passeriformes (1965).
 Ripley or SYNOPSIS.. A SYNOPSIS OF THE BIRDS OF INDIA AND PAKISTAN (1961).

Before I proceed with the formal list, I record my appreciation of the help received from the assistants at the Society, particularly V. C. Ambedkar, B. R. Grubh, D. N. Mathew, M. J. Pereira, and P. B.

* This is yet in the press but it is hoped that it will be possible to refer to it in succeeding instalments.

Shekar, without which my work involving, in addition to mere handling, the measuring of almost every specimen would not have been possible.

Finally, a word of explanation. It is possible that some of my remarks and conclusions are erroneous or out of date. This may be attributed, in part at least, to the absence of several standard works on the ornithology of other parts of the world, as also many of the foreign journals and periodicals. Remedy of the former need would necessitate an appreciable amount of capital investment, but the latter can perhaps be made good, or at least kept up to date, by exchanges against the Society's journal. I trust that this will be done and better facilities will be available to future workers, both in this and in other groups.

1 **Gavia arctica** (Linnaeus) (Russian Turkestan) Blackthroated Diver 6 : 485

1 : ♀ Ambala, Punjab.

This specimen, which constitutes the only record from India, has been named *suschkini* (Sarudny) in both the FAUNA and the SYNOPSIS, ignoring Ticehurst's statement (*JBNHS* 34 : 490) that the specimen does not permit subspecific identification. Vaurie treats *suschkini* as a synonym of the typical race.

2 **Gavia stellata** (Pontoppidan) (Denmark) Redthroated Diver 8 : 703
nil.

3 **Podiceps cristatus cristatus** (Linnaeus) (Sweden) Great Crested Grebe 6 : 477

10 : 5 ♂♂ 5 ♀♀

6 *Persian Gulf and Mesopotamia* ; 1 *Peking, China* : 1 Gujner, Bikaner
1 Viramgam, Gujarat ; 1 no data.

4 **Podiceps nigricollis nigricollis** Brehm (Germany) Blacknecked Grebe 6 : 480

(=*P. caspicus caspicus* (Hablizl) as per Opinion 406, 1956, *Internat. Comm. Zool. Nomen.* 13 : 121)

5 : 3 ♂♂ 2 ♀♀

2 *Banderi-Gaz, near Astrabad, Caspian Province* ; 1 *Mesopotamia* ; 1 *Bhavnagar* ;
1 *Poona*.

EL **Podiceps ruficollis poggei** (Reichenow) (Province of Chihili, China) Little Grebe

1 : ♀ *Peking, China*.

This can be distinguished from the other races by the almost complete absence of the white patch on the wing-coverts.

EL Podiceps ruficollis iraquensis Ticehurst (Ishandarieyeh, Euphrates)

5 : 3 ♂♂ 1 ♀ 1 o ?

5 *Persian Gulf*.

They are all in immature non-breeding plumage and I cannot distinguish them from birds from India either by size or by plumage.

5 Podiceps ruficollis capensis Salvadori (Shoa, Africa) 6 : 481

29 : 9 ♂♂ 9 ♀♀ 11 o ?

2 Kalat, Baluchistan ; 1 Manchar, Sind ; 1 Simla ; 2 Bahawalpur ; 1 Gwalior ; 1 Rajputana ; 2 Meerut, U.P. ; 8 Bombay, 2 Nasik, Maharashtra ; 1 Palnis ; 1 Calcutta Market ; 1 Assam ; 2 *Burma* ; 4 no data.

A female from Kalat, Baluchistan, in breeding plumage has the rufous of the neck extending further downwards than in any of the others. This and a male from the same area and another from Sylhet, Assam, have the underparts irregularly marked ashy, separating them from all the others.

6 Daption capensis (Linnaeus) (Cape of Good Hope) Cape Pigeon or Cape Petrel 6 : 307
nil.

7 Procellaria leucomelaena Temminck (Seas of Japan and Nagasaki Bay) Whitefronted Shearwater 6 : 306
nil.

8 Procellaria carneipes (Gould) (Small islands off Cape Leeuwin, West Australia) Pinkfooted Shearwater 6 : 305
nil.

9 Procellaria pacifica chlorohyncha (Lesson) (Sharks Bay, Western Australia) Wedgetailed Shearwater 6 : 303
nil.

10 Procellaria tenuirostris Temminck (Japan) Slenderbilled Shearwater 6 : 304
nil.

11 Procellaria lherminieri bailloni Bonaparte (Mauritius) Audubon's Shearwater
nil.

12 Procellaria lherminieri persica Hume (At sea between Guadar and Muscat) Persian Shearwater 6 : 306
2 ♀♀ : 1 Bombay (wing : 202) and 1 Alibag, Kolaba (211), both taken in July.

12a Bulweria bulwer (Jardine and Selby) (Madeira) Bulwer's Petrel
No specimen.

This species is mentioned for the Maldives in Vaurie (1965, p. 22) and for the Laccadives by Phillips, *Bull. B.O.C.* 79 : 100 (1959).

13 *Bulweria aterrima* (Bonaparte) (Reunion) Mascarene Black Petrel

The first and only specimen from India (*JBNHS* 42 : 193) was not registered and is now not traceable.

13a *Bulweria fallax* Jouanin (Near Socotra, 12° 30' N, 55°E) Small Black Petrel.

No specimen

Ripley (*JBNHS* 60 : 687) has suggested that this may have been the species recorded as *B. aterrima* (q.v.)

14 *Oceanites oceanicus oceanicus* (Kuhl) (South Georgia) Wilson's Storm Petrel 6 : 300

1 : ♂ Bombay (wing : 145).

15 *Fregetta tropica melanogaster* (Gould) (Southern Indian Ocean) Duskyvented Storm Petrel 6 : 302
nil.

16 *Oceanodroma leucorhoa monorhis* (Swinhoe) (Amoy, China) Leach's Petrel, Forktailed Storm Petrel.
nil.

17 *Phaethon aethereus indicus* Hume (Mekran Coast) Short-tailed Tropic-bird 6 : 291

6 : 3 ♀♀ 3 ♂ ?

5 *Persian Gulf*; 1 Kolaba, Maharashtra.

Three have the middle pair of tail feathers elongated, one in each pair being frayed and the other fresh.

18 *Phaethon rubricauda rubricauda* Boddaert (Mauritius) Redtailed Tropic-bird 6 : 292
nil.

19 *Phaethon lepturus lepturus* Daudin (Mauritius) Longtailed Tropic-bird 6 : 293
nil.

20 *Pelecanus onocrotalus* Linnaeus (Africa, Asia) White or Rosy Pelican 6 : 271

8 : 2 ♂♂ 3 ♀♀ 3 ♂ ?

1 *Mesopotamia*; 4 Gujarat; 3 Bihar.

There still appears to be diversity of opinion regarding the relationships of the several pelicans. The SYNOPSIS has no races of this species and treats *crispus* as a race of *philippensis*. In the NEW DICTIONARY OF BIRDS (1964, p. 608), the expression 'White (or Rosy or Spotted-billed) Pelican' seems to refer to one species.

The present identifications are based on the key in the FAUNA—the feathers of the forehead ending in a point in this species as against an

inwardly curved line in the others. The primary shafts are also all pale coloured as against black in the others.

Their wings measure 612-735 (av. 675) and bills 303-420 (av. 341). While these measurements are more or less in keeping with those recorded earlier, it is curious that the only two birds which are completely brown above, i.e. in immature plumage, have the largest wings, 700 and 735. Their bills are 335 and 420 respectively, both being unsexed.

21 *Pelecanus philippensis philippensis* Gmelin (Manila) Grey or Spottedbilled Pelican 6 : 274

3 : 1 ♂ 2 ♀♀.

1 Vizagapatam ; 1 Madhubani, Darbhanga, Bihar ; 1 no data, collected like the immediately preceding specimen by C. M. Inglis and probably from same area.

In the two females (both September) the ivory-white bills, with the line of irregularly shaped black spots on both sides, are very distinct. In the male (June) the bill is brownish with traces of some parts having peeled off.

The wings measure 570 (2 ♀♀), 588 ♂ : av. 576 ; bills 305 ♀—355 ♂ : av. 333. One female is in breeding plumage with the upper parts white and the breast feathers lanceolate as in a male *onocrotalus*. The primary shafts, as in the next form, are black.

22 *Pelecanus philippensis crispus* Bruch (Dalmatia) 6 : 273

2 : 2 o ? Bhavnagar. Wings 655, 665 ; bills 345, 390.

Though the feathers of the forehead and the dark shafts of the primaries are similar to those of the previous form, this can be separated by its larger size and the black shafts to the feathers of the scapulars, wing-coverts, and shorter upper tail-coverts.

23 *Sula dactylatra melanops* Heuglin (Burda-Rebschi, Somali Coast) Masked Booby 6 : 287

4 : 3 ♀♀ 1 o ?

All from Bombay, July (2), August, and December.

Wings 420, 420, 412, 410 ; bills 105, 96, 97, 100.

24 *Sula sula rubriceps* Gould (New South Wales, Raine Island, northern Queensland) Redfooted Booby 6 : 286
nil.

25 *Sula leucogaster plotus* (Forster) (Near New Caledonia) Brown Booby 6 : 285

4 : 1 ♀ 3 o ?

1 off Hongkong (wing: 404); 1 Red Sea (385); 1 Karwar (408 ; bill 95 mm) ; 1 no data.

The Karwar bird was collected by G. Monteith, i.c.s. ; no date appears on the label, but we have other specimens obtained by him in the same area during 1916 and there seems to be no reason to ignore

an apparently overlooked record. Its range extends into the Red Sea, though this is not suggested by the wording in the SYNOPSIS.

Phillips & Sims recently recorded the race *rogersi* Mathews from the Maldives (JBNHS 55 : 202), but this race is not accepted either by Vaurie or in the SYNOPSIS.

26 *Phalacrocorax carbo sinensis* (Shaw) (China) Cormorant 6 : 277

11 : 2 ♂♂ 7 ♀♀ 2 o ?

4 *Persian Gulf*; 1 Baluchistan; 1 Lucknow; 3 Bihar; 1 Malwa; 1 Nasik.

No. 15002, ♀ from Herbiz, 55 miles east of Panjgur, Baluchistan, has 4 feathers on each side of the tail badly frayed and brown in colour, as against the other feathers which are normal and black. THE NEW DICTIONARY OF BIRDS (1964) p. 488 states that tail feathers (in most species of this family) are moulted in symmetrical pairs and the moult commonly begins with the central pair and proceeds centrifugally. This great disparity in the feathers at one time is very striking. A similar condition exists in No. 21333 a ♀ *P. fuscicollis*, there being 2 faded-brown feathers on one side and three on the other.

27 *Phalacrocorax fuscicollis* Stephens (Bengal) Indian Shag 6 : 279

1 : ♀ Nasik, Maharashtra.

Wing 244. Upper breast white.

28 *Phalacrocorax niger* (Vieillot) (Bengal) Little or Pygmy Cormorant 6 : 280

20 : 8 ♂♂ 10 ♀♀ 2 o ? (3 juveniles).

1 Sind; 1 Jaipur; 1 Gwalior; 1 Gir; 1 Calcutta Bazar; 1 Tirunelveli; 7 Bombay; 1 Nasik; 3 Bihar; 2 Oudh, U.P.; 1 *Burma*.

The amount of white on the chin varies greatly and cannot be linked with sex or locality. According to the FAUNA, the black chin is a character of the breeding plumage.

28a *Phalacrocorax pygmeus* (Pallas) (Caspian Sea)

3 : 1 ♂ 2 ♀♀.

1 *Amara, Iraq*; 1 *Enzil Gilan, North Persia*; 1 *Gujar Mashkai Kalat, Baluchistan*.

The last mentioned specimen constitutes the first record from India (JBNHS 62 : 553), having been overlooked for many years.

29 *Anhinga rufa melanogaster* Pennant (Ceylon and Java) Darter 6 : 282

14 : 1 ♂ 11 ♀♀ 2 o ?

1 *Amara, Iraq*; 2 *Gulf of Kutch*; 1 *Gujarat*; 2 *U.P.*; 1 *Rajasthan*; 3 *Bihar*; 1 *Malwa*; 1 *Nepal*; 1 *Burma*; 1 no data.

Sp. No. 21388 ♂ from Kutch (July 1962) has its wing quills in moult and was incapable of flight. A ♀ from the same area (No. 22078) has its underparts completely white.

The ♀ from Amara has black underparts with the pure white of the upper breast extending to the chin. It is marked *A. rufus* and is presumably *A. r. chantrei* (Oustalet). It can be matched with No. 15031 from Burma, except that the bases of the black feathers of the underparts are white in the former and dark in the latter. The upperparts of both differ from those of the others, but the Iraq bird is slightly washed with rufous and the other with grey. A bird from Oudh, U.P. (No. 15032) and the Kutch bird referred to earlier (No. 22078) are similar in this respect.

30 **Fregata andrewsi** Mathews (Christmas Island, Indian Ocean)
Christmas Island Frigate Bird 6 : 295
nil.

To be removed from the Indian list (see Abdulali, *JBNHS* 57 : 667).

31 **Fregata minor aldabrensis** Mathews (Aldabra Island) Lesser
Frigate Bird 6 : 297
1 o ? Quilon, Kerala.

32 **Fregata ariel iredalei** Mathews (Aldabra Island) Frigate Bird
6 : 298
nil.

A specimen obtained near Bombay (*JBNHS* 57 : 668) is exhibited at St. Xavier's High School, Bombay.

33 **Ardea imperialis** Baker (Sikkim Terai, Bhutan Duars) Great
Whitebellied Heron 6 : 342
3 : 1 ♂ Naga Hills ; 1 ♀ 1 o ? Duars.

34 **Ardea goliath** Cretzschmar (White Nile, Bahhar Abiad) Giant
Heron 6 : 343
4 o ?
3 Basra, Mesopotamia ; 1 Khulna, Sunderbans, Bengal.

Only No. 15103, said to have died in captivity in Basra, has the dark rufous underparts of the adult. Its wing and bill (from gape) are 572 and 212 (176 from feathers) as against 590 and 246 (202 from feathers) in the bird from Bengal. The difference in the size of the bill is very noticeable.

35 **Ardea cinerea cinerea** Linnaeus (Europe, restricted to Sweden)
Grey Heron 6 : 339

36 **Ardea cinerea rectirostris** Gould (India) Grey Heron 6 : 340
9 : 1 ♂ 6 ♀♀ 2 o ?
3 Bubiyan Is., Muscat, Baghdad ; 1 Upper Sind ; 2 Oudh, U.P. ; 2 Gujarat ; 1 South Kanara.

Typical material not being available, it is difficult to decide if *rectirostris* Gould can be distinguished from *cinerea*. The bird from South

Kanara in sub-adult plumage carried a ring placed on it at Kazakhstan (40° 48' N. 70° E), U.S.S.R. (*JBNHS* 59 : 650). The birds from this area are accepted as *cinerea* and this specimen is hardly darker than the others in similar plumage, though both its wing (468) and its bill (129) are larger than in any of the others (wings 418-464 av. 442.5 and bills 113-125 av. 120).

Of the three in adult plumage (Bubiyan Is., Jamnagar, Oudh), the upperparts of the birds from Oudh are palest. Vaurie (1965 : 73) says: 'birds from Iraq and eastward to India are also slightly paler, but in my opinion these populations are best referred to nominate *cinerea*'. He accepts *jouyi* Clark from Seoul, Korea.

37 *Ardea purpurea manilensis* Meyen (Philippines) Purple Heron 6:337

7 : 5 ♀♀ 2 ♂ ? (3 juv.).

1 Gujarat ; 2 Bombay ; 1 Darbhanga, Bihar ; 1 Trinkut, Central Nicobars ; 2 Burma.

37a *Ardea purpurea purpurea* Linnaeus (Philippines)

6 : 1 ♀ 5 ♂ ? (1 juv.).

Persian Gulf area.

They include one marked 'Kurna, June/July 1916 Maj. H. Wall'. The locality cannot be traced on the maps available, but snakes were obtained by Col. Wall from this area between January 1916 and January 1917 and it probably refers to Al Qurna at the confluence of the Tigris and the Euphrates.

Vaurie (p. 75) accepts birds from Iraq as of the nominate race and separates *manilensis* by its almost completely black lower belly, against variegated with chestnut in the present form. These differences are consistent in the specimens available and, considering that Meinertzhagen (*Ibis* 1920 : 179) and Christisen (*JBNHS* 43 : 486) have both identified specimens from Baluchistan as of this race, it would appear that though it is omitted from the SYNOPSIS it has a place in the Indo-Pakistan avifauna.

38 *Butorides striatus javanicus* (Horsfield) (Western Java) Little Green Heron 6 : 357

18 : 5 ♂♂ 7 ♀♀ 6 ♂ ? (7 ad. with grey underparts; 5 sub-ad. brownish below ; 6 imm. with streaked breasts.)

1 Ambala, Punjab ; 1 Kutch ; 1 Saronj, M.P. ; 4 Bombay, 1 Kihim, Kolaba, 1 Khandala, 2 Ratnagiri ; 1 North Kanara ; 1 Darbhanga, 1 Chapra, Bihar ; 3 Burma ; 1 Rabeng, Siam.

In my Andaman paper (*JBNHS* 61 : 501) I had referred to Biswas separating Indian birds from those from Java by their larger size and some differences of colour (one measurement of 174 mm. was a typographical error for 184). The five birds from Bihar and Burma are larger than those from other parts of India :

5 Bihar and Burma
13 others

Wings
179-185 av. 182·8
167-181 av. 171·3

Both sexes and birds in different plumages are measured together as there does not appear to be any difference in size between them. Some birds have one wing as much as 5 mm. longer or shorter than the other. There is great variation in plumage; some birds have the primaries in one wing of different colour from those in the other, and beyond confirming that the eastern and Burmese birds do appear larger than those from other parts of the country, I am unable to venture an opinion. These larger birds may perhaps be listed as Bonaparte's *chloriceps*.

39 **Butorides striatus spodiogaster** Sharpe (Andamans and Nicobars)
Little Green Heron 6 : 359

12 : 4 ♂♂ 7 ♀♀ 1 o ?

3 Betapur, Middle Andamans ; 2 Car Nicobar ; 7 Central Nicobars.

40 **Butorides striatus didii** Phillips & Sims (Male Island, North Male Atoll, Maldive archipelago)
nil.

This was described in 1958 and is an addition to the 19 races listed in Peter's CHECK-LIST OF THE BIRDS OF THE WORLD (1929).

41 **Butorides striatus albidulus** Bangs (Suadiva Atoll, Maldive Islands)
nil.

Southern atolls of the Maldive archipelago.

42 **Ardeola grayii grayii** (Sykes) (Dukhun) Pond Heron or Paddy-bird 6 : 354

31 : 16 ♂♂ 11 ♀♀ 4 o ? 1 pull. ; 3 in breeding plumage.

17 Bombay, 4 Ratnagiri, Maharashtra ; 1 Nilambur, Kerala ; 2 Kanyakumari District, Madras ; 2 Bastar, M.P. ; 1 Manbhum, Bihar ; 1 Calcutta ; 1 Andamans ; 2 *Burma*.

The males are larger than the females, eight of each sex from around Bombay having their wings 195-218 av. 208, and bills 51 (next 60) to 68 av. 61·5 against 180-203 av. 193, and 55-60 av. 57·5, respectively.

42a **Ardeola grayii phillipsi** Scheer (Addu Atoll, Maldives)
nil.

Described from the Maldives in 1960 as 'they tend to be whiter on the primaries' (Vaurie 1965 : 63). It is significant that two males from Ratnagiri, Maharashtra, West Coast, Nos. 20973 and 22307 differ from all the others, including those in breeding plumage, in having white shafts to all the primaries. In *ralloides* all adults have them white and this is quoted as an index of maturity.

- 43 **Ardeola bacchus** (Bonaparte) (Malay Peninsula) Chinese Pond Heron 6 : 356
nil.

EL **Ardeola ralloides** (Scopoli) (Krain)
6 : 1 ♂ 2 ♀♀ 3 o ? (1 juv. ; 3 in breeding plumage).
1 *Medina* ; 5 *Persian Gulf*.

EL **Bubulcus ibis ibis** (Linnaeus) (Egypt)
2 : 2 ♂♂.
Sheik Saud, Mesopotamia.

Both are in non-breeding plumage and I cannot separate them from Indian birds.

44 **Bubulcus ibis coromandus** (Boddaert) (Coromandel) Cattle Egret 6 : 349
23 : 12 ♂♂ 10 ♀♀ 1 o ? (4 in breeding plumage).
1 Meerut, 1 Shahjahanpur, U.P. ; 1 Rajputana ; 2 Gujarat ; 15 Bombay ; 1 Nasik ;
1 Andamans ; 1 *Burma*.

Of the four in breeding plumage, the three sexed are males. Some skins with slight traces of the breeding plumage on the upperparts are marked females.

Though the smallest wings of both sexes are identical, the males are larger—233-263 av. 251, against 233-253 av. 242 in the females. Curiously, their bills and tarsi do not show any differences.

45 **Egretta alba alba** (Linnaeus) (Sweden) Large Egret 6 : 345
1 o ? Manchar Lake, Sind.
Wing 447 ; Bill from feathers 126, from gape 163 ; Tarsus 215.

46 **Egretta alba modesta** (Gray) (India) 6 : 346
8 : 3 ♂♂ 4 ♀♀ 1 o ?
1 Kutch ; 3 Gujarat ; 2 Bombay ; 1 Andamans ; 1 *Burma*.

The males are larger than the females and the Andamans bird was originally wrongly identified as *intermedia* (Abdulali, *JBNHS* 62 : 554).

47 **Egretta intermedia intermedia** (Wagler) (Java) Smaller Egret 6 : 347
5 : 2 ♂♂ 2 ♀♀ 1 o ?
1 Saugor, C.P. ; 1 Bharatpur ; 3 Bombay.

All with yellow bills, except black in a ♀ dt. 17-7-1959 in which the dorsal plumes project far beyond the tail. The sexes show no difference in size and measure :

Wing	Bill	Tarsus
296-305 av. 301	70-77 av. 73	99-110 av. 105.4

[13]

The measurements in the FAUNA (6 : 347) are erroneous (see Abdulali, JBNHS 62 : 554).

[48 *Egretta intermedia palleuca* Deignan (Muang Chiang Rai, Siam)

This race from Thailand, Burma, and eastern India separated for having the bill yellow at all seasons is not now accepted. Egrets and herons change the colour of their bills and other soft parts for very short and transitory periods.]

49 *Egretta garzetta garzetta* (Linnaeus) (North-east Italy) Little Egret 6 : 348

7 : 4 ♂♂ 2 ♀♀ 1 o ?

1 *Baghdad* ; 1 Gujarat ; 1 Gondia, Bhandara Dist., 3 Bombay, Maharashtra ; 1 Kanyakumari Dist., Madras.

50 *Egretta gularis schistacea* (Hemprich & Ehrenberg) (Red Sea) Indian Reef Heron 6 : 353

11 : 6 ♂♂ 3 ♀♀ 2 o ?

1 *Muscat* ; 1 Indus Delta, Sind ; 3 Kutch ; 4 Bombay, 1 Nasik, 1 Ratnagiri.

The males are slightly larger than the females.

There is no all-white specimen available, but two are dark slaty black with a prominent patch of pure white wing-coverts about half way down the edge of the wing. One is a male from Kutch and the other an unsexed bird from Muscat which, being larger than all the others (wing 293, bill 99), is probably also a male. A third is almost as dark but lacks the white on the wing. The colours of the feet are not noted on all, but the bird from Kutch had them bright yellow (as in the Little Egret, *E. garzetta*) and the same was noted in another dark bird with a white wing patch recently seen (October 1965) at Rewas, Alibag, Maharashtra.

The other specimens are in varying shades of lighter grey with an unequal amount of white on the underparts.

Ripley and Vaurie (1965, p. 70) both state that the form occurring in India is *schistacea* (Type locality : El Tor, Sinai Peninsula), but the latter adds that it is larger than the nominate *gularis*. His measurements (marked with asterisks below) however, compared with those of the few available, show that the wings of Indian birds are nearer to *gularis* and the bill and tarsus intermediate between the two races ; the single unsexed bird from Muscat agrees with *schistacea* :

	Wing	Bill	Tarsus
* 10 ♂♂ <i>schistacea</i>	272-311 av. 288.3	94-103 av. 98.5	92-116 av. 103.55
6 ♂♂ Indian	272-285 av. 276	85- 98 av. 92	97-101 av. 99
* 10 ♂♂ <i>gularis</i>	263-285 av. 277.1	80- 94 av. 84.7	80- 95 av. 89.5
1 o ? Muscat	293	99	101

With the material available it is not possible to suggest any conclusions.

51 *Egretta sacra* (Gmelin) (Tahiti) Reef Heron 6 : 351

7 : 5 ♂♂ (including 2 white) 2 ♀♀.

1 Middle Andamans ; 5 Car Nicobar ; 1 Camorta, Central Nicobars.

52 *Nycticorax nycticorax nycticorax* (Linnaeus) (Southern Europe) Night Neron. 6 : 359

20 : 8 ♂♂ 5 ♀♀ 7 o ? [1 ch. ; 6 juv. ; 12 ad. ; 1 albino (Bihar)].

5 *Mesopotamia* and *Persia* ; 2 Chitral ; 1 Punjab ; 1 Gujarat ; 7 Bombay ; 2 Bihar ;1 *Burma* ; 1 *Peking, China*.

The 6 adults collected from January to March have a green gloss on the upperparts while the same number from April to November do not.

53 *Gorsachius melanolophus melanolophus* (Raffles), (Western Sumatra). Malay or Tiger Bittern 6 : 361

6 : 1 ♂ 2 ♀♀ 3 o ? (4 in adult plumage, 2 juv.).

2 Mysore ; 3 Karwar ; 1 Ceylon.

54 *Gorsachius melanolophus minor* Hachisuka (Katchel Island, Nicobar Islands)

nil.

55 *Ixobrychus minutus minutus* (Linnaeus) (Switzerland) Little Bittern 6 : 364

10 : 3 ♂♂ 3 ♀♀ 4 o ? (5 in adult male plumage ; 1 female ; 4 juv.).

4 *Mesopotamia* ; 5 Kashmir ; 1 Bombay.

The register included under this species 4 birds, ♂, ♀ and o ?, which have pale buff margins to the feathers of the upper surface, are smaller (wing 125-137 av. 131, against 142-151 av. 146), and do not have a black cap ; they also have the first primary shorter than the second, as in the specimens of *sinensis* available, against the first and second being equal in 9 of the 10 *minutus*, a character which is mentioned in the BR. HANDBOOK (3 : 165). I think they are *sinensis* and have listed them accordingly.

56 *Ixobrychus cinnamomeus* (Gmelin) (China) Chestnut Bittern 6 : 367

19 : 7 ♂ 6 ♀ 6 o ? (7 all-chestnut ; 6 juv)

1 Sind ; 1 Daman, Gujarat ; 4 Bombay ; 1 Poona ; 3 Kanara ; 1 Kottayam, Kerala ; 2 Tirhut, Bihar ; 2 Calcutta Market ; 1 Assam ; 1 Trinkut, Central Nicobars ; 1 *Burma* ; 1 *Ceylon*.

The 7 all-chestnut birds include a ♀. From the material available it is not possible to understand the sequence of plumages.

57 *Ixobrychus sinensis* (Gmelin) (China) Yellow Bittern 6 : 365

11 : 4 ♂♂ 5 ♀♀ 2 o ? (2 ad. ♂♂ ; 1 ad. ♀).

1 *Kashgar*, 1 *Burma* ; 2 Sind ; 1 Chapra, Bihar ; 1 Kutch ; 2 Bombay ; 1 South Andamans ; 2 Trinkut, Central Nicobars.58 *Dupetor flavicollis flavicollis* (Latham) (India) Black Bittern 6 : 3681 : ♂ *Ataran, Burma*.

Bill 85 (69-82 in FAUNA).

59 **Botaurus stellaris stellaris** (Linnaeus) (Europe, restricted to Sweden) Bittern 6 : 370

14 : 7 ♀♀ 7 ♂?

2 *Mesopotamia* ; 1 *Shiraz, Persia* ; 4 *Sind* ; 3 *Punjab* ; 1 *Kutch* ; 1 *Agra* ; 2 *Bombay*.

Curiously, the seven sexed specimens are all females. The unsexed birds have their wings and bills slightly larger and may include males.

60 **Ibis leucocephalus** (Pennant) (Ceylon) Painted Stork 6 : 331

6 : none sexed (5 ad. ; 1 in juvenile plumage, but not smaller in size).

1 *Bhavnagar* ; 1 *Bombay Harbour* ; 3 *Baghowni, Bengal* ; 1 no data.

The range of measurements is slightly different from that in the FAUNA.

Wing 490-523 av. 505 (490-510) ; tarsus 205-242 av. 225 (240-250) ; culmen 230-256 av. 246 (252-278).

Vaurie (1965 p. 86) refers to Ticehurst's records from Baluchistan, which have been omitted in the SYNOPSIS.

61 **Anastomus oscitans** (Boddaert) (Pondicherry) Openbill Stork 6 : 333

4 : 3 ♂♂ 1 ♀.

1 ♂ and 1 ♀ are in juvenile plumage with almost no gap in bill.

1 *Malwa, M.P.* ; 1 *Baghowni, Bengal* ; 1 *Darbhangha, Bihar* ; 1 *Burma*.

62 **Ciconia episcopus episcopus** (Boddaert) (Coromandel Coast) Whitenecked Stork 6 : 324

12 : 7 ♂♂ 4 ♀♀ 1 ♂?

1 *Malwa*, 1 *Gird, M.P.* ; 1 *Ratnagiri* ; 7 *Bihar* ; 1 *Nepal* ; 1 *Burma*.

The males have wings (471-523 av. 493) slightly larger than the females (450-516 av. 485).

63 **Ciconia ciconia ciconia** (Linnaeus) (Sweden) White Stork 6 : 320

4 : 4 ♂♂.

1 *Persian Gulf* ; 1 *Patan, Satara, Maharashtra* ; 2 *Baghowni, Bengal*.

64 **Ciconia ciconia asiatica** Severtzov (Turkestan) White Stork 6 : 322

nil.

Biswas in his comments on the SYNOPSIS (*JBNHS* 60 : 680) says that Severtzov's *asiatica* is synonymous with nominate *ciconia* and presumably suggests that the remarks regarding *asiatica* wintering in 'Burma, Assam, East Pakistan, south to the Sunderbans' should apply to *boycciana* (Swinhoe) as in the FAUNA (6 : 322). Vaurie (1965 : 64) has accepted *asiatica* as a good race with a larger bill (184-235 av. 215 against 169-206 av. 189, all males from skull) and expressed the opinion that *boycciana* is a different species, separated by its black bill, red skin on the face, and larger size. From the references immediately available to me, I have

no evidence of the occurrence of the White Stork in that area, except for Stuart Baker's statement (loc. cit.) that he saw a pair with black bills in Khulna in Bengal. Smythies in BIRDS OF BURMA (1953 : 520) specifically states there are no records of the White Stork from Burma, while it is mentioned in the SYNOPSIS.

La Touche in HANDBOOK OF BIRDS OF EASTERN CHINA (1934) measures the wings of 2 *boycciana* as 665 and 680 against 590-614 av. 600 in the 3 males of nominate *ciconia* from India. The bills are also 225 against 198-202 (from feathers) in the Bombay specimens.

- 65 **Ciconia nigra** (Linnaeus) (Sweden) Black Stork 6 : 323
3 o?
1 Persian Gulf; 2 Baghowni, Bengal.

- 66 **Xenorhynchos asiaticus asiaticus** (Latham) (India) Blacknecked Stork 6 : 326
3 : o? 2 adult; 1 imm.
1 Gwalior; 2 Baghowni, Bengal.

- 67 **Leptoptilos dubius** (Gmelin) (India) Adjutant 6 : 327
nil.

- 68 **Leptoptilos javanicus** (Horsfield) (Java) Lesser Adjutant 6 : 329
nil.

- 69 **Threskiornis melanocephala** (Latham) (India) White Ibis 6 : 314
2 : 1 ♂ 1 o? Both immature, with grey-feathered heads.
1 Bhuj, Kutch; 1 no data.

The FAUNA (6 : 314) measures the bills 139-170; both the present specimens are 183 from feathers, which measurement would increase as the feathers recede.

- 70 **Pseudibis papillosa papillosa** (Temminck) (India) Black Ibis 6 : 316
6 : 1 ♂ 4 ♀♀ 1 o?
1 Sind; 1 Ahmedabad; 1 Meerut, U.P.; 1 Malwa, C.I.; 1 Darbhanga, Bihar;
1 Baghowni, Bengal.

The male, wing 360 (365-400), bill 127 (138-158), tarsus 60 (75-85), is smaller than the range indicated in the FAUNA.

- 71 **Plegadis falcinellus falcinellus** (Linnaeus) (Austria and Italy) Glossy Ibis 6 : 318
4 : 1 ♀ 3 o?
1 Manchar Lake, Sind; 1 Honavar, North Kanara; 1 Darbhanga, Bihar; 1 no data.
[17]

72 **Platalea leucorodia major** Temminck & Schlegel (Japan) Spoon-bill 6 : 311

4 : 1 ♂ 1 ♀ 2 o ?

1 Sind ; 2 Nasik, Maharashtra ; 1 no data.

Stuart Baker in the FAUNA states this is a poor subspecies while Vaurie (p. 78) includes this as a synonym of the nominate form.

73 **Phoenicopterus roseus** Pallas (Mouth of the River Volga, South Russia) Flamingo. 6 : 373

13 : 3 ♂♂ 2 ♀♀ 8 o ? [5 ad., 4 juv. (marked * below), 4 ch.]

1 *Aden**, 1 *Persian Gulf** ; 3 Sind ; 4 Rann of Kutch (ch.) ; 2 Gulf of Kutch ; 1 Bhayander*, 1 Manmad *, Maharashtra.

The 2 males have larger wings, 430-447 av. 438 and tarsi 335-365 av. 350 against 398-435 av. 416 and 280-365 av. 322 in the females. The juvenile with the smallest 339 wing, and 216 tarsus (its bill is 129 and almost full grown), presumably flew to Bhayander near Bombay, from Kutch, the nearest breeding place, which is almost 400 miles away.

Two adults obtained in August have pink bills, while the three others, all collected in December, do not have any pink. The colours in the 'dry' state may be of little significance.

74 **Phoeniconaias minor** (Geoffroy) (East Africa) Lesser Flamingo. 6 : 375

2 : 1 ♀ 1 o ?

1 Bombay Zoo (imm.) ; 1 Gulf of Kutch.

(to be continued)